

EWP PRODUCT GUIDE

www.USPconnectors.com

For Use With Products Manufactured by

DEFINING INNOVATION.



**ENGINEERED
WOODS**



THF25925 ●



LSSH25 ●



THO25118 ●



A GIBRALTAR INDUSTRIES COMPANY 

Lumberton • Largo • North Wilkesboro • Montgomery • Houston • Rancho Cucamonga • Livermore • Thornhill, Ontario

GENERAL NOTES

Follow these instructions to ensure the proper installation of USP products.

- See current USP Full Line Catalog for General Notes, Warranty, and installation information for hanger models, joist sizes, and header situations not shown.
- Loads listed address hanger/header/fastener limitations assuming header material is Douglas Fir-Larch, Southern Pine or LVL. Joist reaction should be checked by a qualified designer to ensure proper hanger selection.
- Uplift loads have been increased 33% for wind or seismic loads and no further increase shall be permitted. Reduce loads according to code for normal duration loading such as cantilever construction.
- If hanger height is less than 60% of joist height, joist rotation may occur; see page 3.
- The type and quantity of fasteners used to install USP products is critical to connector performance. To achieve the allowable loads shown in this catalog, install with the fasteners specified for that particular product. All specified fasteners must be properly installed prior to applying load of any kind to the connection.
- Throughout this catalog, dimensions are expressed in inches and loads in pounds, unless specifically noted otherwise.
- Load values for 10d and 16d designations in the fastener schedules throughout this catalog refer to common wire nails, unless note otherwise.
- The allowable loads shown in this catalog are based on Allowable Stress Design methodology.
- **Multiple I-Joist Plies:** Fasten together multiple plies of wood I-Joists, in accordance with the manufacturer's installation guidelines, such that the joists act as a single unit.
- **Sloped I-Joists:** Use sloped seat hangers and beveled web stiffeners whenever the slope exceeds the following: 1/2:12 for seat bearing lengths of 2 1/2" or less; 3/8:12 for bearing lengths between 2 1/2" and 3 1/2"; and 1/4:12 for bearing lengths in excess of 3 1/2".

Backer Blocks – Pattern the nails used to install backer blocks or web stiffeners in wood I-Joists to avoid splitting the block. The nail pattern should be sufficiently spaced to avoid the same grain line, particularly with solid sawn backer blocks. Backer blocks must be installed on wood I-Joist acting as the header, or supporting member.

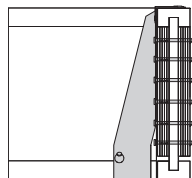
Install in accordance with the I-Joist manufacturer's installation guidelines. The nails used to install hangers mounted to an I-Joist header must penetrate through the web and into the backer block on the opposite side.

With top flange hangers, backer block required only for downward loads exceeding 250 lbs or for uplift conditions

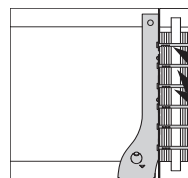
Filler and Backer Block sizes

Joist Designation	Flange Width	Backer Block		Joist Depth	Filler Block Size
		Thickness Required	Minimum ¹ Depth		
ATI-64	2-1/2"	1"	5-1/2"	9-1/2"	2" x 6"
				11-7/8"	2" x 8"
				14"	2" x 10"
				16"	2" x 12"
ATI-89	3-1/2"	1-1/2"	7-1/4"	11-7/8"	3" x 8"
				14"	3" x 10"
				16"	3" x 12"
				16"	3" x 12"

¹ For face-mount hangers, backer block minimum depth should be joist depth minus 3-1/4".

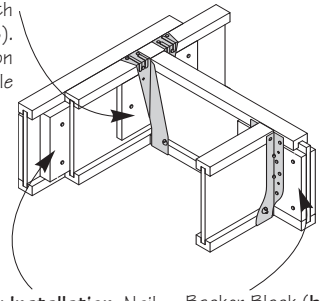


Typical THO backer block installation



Typical THF backer block installation

Backer Block Installation:
Install tight to top flange (tight to bottom flange with face mount hangers). Attach with ten 10d common nails, clinched when possible

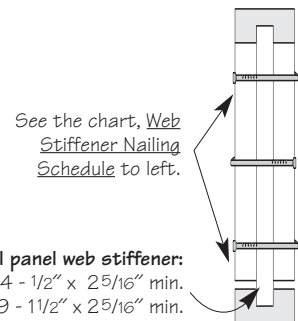


Filler Block Installation: Nail with ten 10d common nails, at 12" on center, driven from each side, staggered.
Backer Block (both sides) of web with single joist

Web Stiffener Attachment

Web Stiffeners are optional except as noted below:
Web stiffeners are always required in hangers that do not extend up to support the top flange of the joist. Web stiffeners may be required with certain sloped or skewed hangers or to achieve uplift values. Refer to the hanger manufacturer's installation requirements.

Flange Width	Minimum Stiffener Size
2-1/2"	1" x 2-5/16"
3-1/2"	1-1/2" x 2-5/16"



Structural panel web stiffener:
ATI-64 - 1/2" x 2-5/16" min.
ATI-89 - 1/2" x 2-5/16" min.

Gap: 1/8" min. 2" max.

EWP INSTALLATION

Support Height & Lateral Stability

Hangers for joists **without web stiffeners** must support the I-Joist's top flange and provide lateral resistance with no more than 1/8" horizontal deflection.

Hangers for joists **with web stiffeners** must support a minimum of 60% of joist depth.



(Top flange support requirements can be verified in *EWP Top Mount Hangers* charts under the *Web Stiffener Req.* column of USP's *Full Line Catalog*.)

Nailer Installations

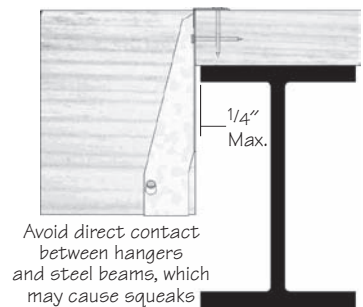
Correct Hanger Attachment to Nailer

A nailer or sill plate is considered to be any wood member attached to a steel beam, concrete block wall, concrete stem wall, or other type of support which is unsuitable for nailing, and is used as a nailing surface for top mount hangers to hold beams or joists.

Nailer Sized Correctly

Top flange of hanger is fully supported and recommended nails have full penetration into nailer, resulting in a carried member hanging safely at the proper height.

The nailer must be sized to fit the support width as shown and be of sufficient thickness to satisfy recommended top flange nailing requirements. A design professional must specify nailer attachment to steel beams.

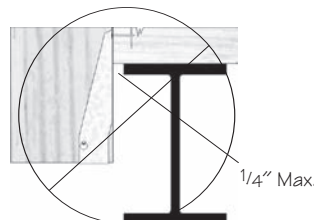


Wrong Nailer Size Causes Component Failure



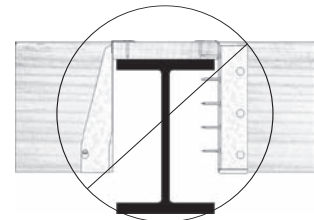
⚠ Too Narrow

Top flange not fully supported can cause nail breakout. Or, by fully supporting top flange, hanger is tilted back, causing lifting of carried member which results in uneven surfaces and squeaky floors.



⚠ Too Wide

Loading can cause cross grain breaking of nailer. The recommended nailer overhang is 1/4" maximum per side.

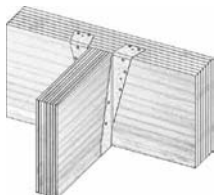


⚠ Too Thin

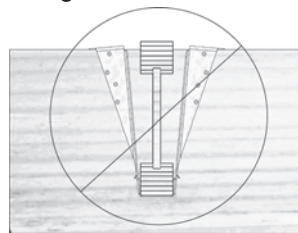
Top flange nailing cannot fully penetrate nailer, causing reduced allowable loads. Never use hangers which require multiple face nails since the allowable loads are dependent on all nail holes being used.

Top Flange Hangers

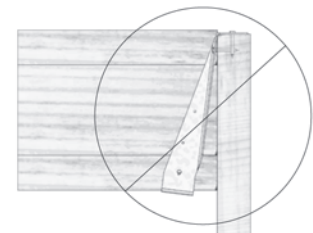
The thickness of the hanger metal and nail heads on top mount hangers must be evaluated for the effect on subsequent sheathing. Ensure the top mount hanger is installed so the flanges of the hanger are not *over-spread* which tends to elevate the supported I-Joist, causing uneven floor surfaces and squeaking. Similarly, ensure the hanger is installed plumb such that the face flanges of the hanger are mounted firmly against the wide-face surface of the header.



Flush framing



⚠ Hanger over-spread



⚠ Hanger not plumb

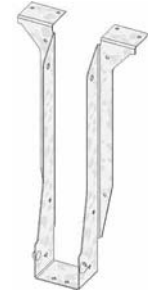
SINGLE I-JOISTS

Joist Height	Top Mount Hangers ⁴					Face Mount Hangers				
	USP Stock No. ^{1,6}	Fastener Schedule ⁵		DF-L/SP		USP Stock No. ^{1,6}	Fastener Schedule ⁵		DF-L/SP	
		Header	Joist	Down ² 100%	Uplift ³ 133%		Header	Joist	Down ² 100%	Uplift ³ 133%
ATI-64										
Joist Width = 2-1/2"										
9-1/2	TFL2595	(6) 10d	(2) 10d x 1-1/2	1600	300	THF25925	(12) 10d	(2) 10d x 1-1/2	1370	175
11-7/8	TFL25118	(6) 10d	(2) 10d x 1-1/2	1600	300	THF25112	(14) 10d	(2) 10d x 1-1/2	1595	300
14	TFL2514	(6) 10d	(2) 10d x 1-1/2	1600	300	THF25140	(18) 10d	(2) 10d x 1-1/2	2090	300
16	TFL2516	(6) 10d	(2) 10d x 1-1/2	1600	300	THF25160	(22) 10d	(2) 10d x 1-1/2	2550	300
ATI-89										
Joist Width = 3-1/2"										
11-7/8	THO35118	(10) 10d	(2) 10d x 1-1/2	2050	300	THF35112	(16) 10d	(2) 10d x 1-1/2	1825	245
14	THO35140	(12) 10d	(2) 10d x 1-1/2	2715	265	THF35140	(20) 10d	(2) 10d x 1-1/2	2320	245
16	THO35160	(12) 10d	(2) 10d x 1-1/2	2715	265	THF35157	(22) 10d	(2) 10d x 1-1/2	2550	245

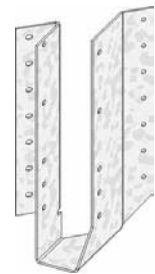
- 1) Web stiffeners may be required for hangers by I-joist manufacturers.
- 2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L or SP species solid sawn or LVL header.
Some loads may be increased for duration of load adjustments. Refer to USP Full Line Catalog for details.
- 3) Uplift loads have been increased 33% for wind and seismic loading; no further increase shall be permitted.
- 4) Top Mount Hangers require minimum 3" header width for THO series hangers; 3-1/2" minimum header thickness for all other stock numbers.
- 5) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long.
Minimum nail penetration shall be 1-1/2" for 10d nails.
16d sinkers (0.148" diameter) by 3-1/4" long may be substituted for 10d common nails with no load reduction.
- 6) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.

Joist Height	Adjustable Height Hangers					Skewed 45° Hangers				
	USP Stock No. ^{1,5}	Fastener Schedule ⁴		DF-L/SP		USP Stock No. ^{1,5}	Fastener Schedule ⁴		DF-L/SP	
		Header	Joist	Down ² 100%	Uplift ³ 133%		Plate	Rafter	Down ² 100%	Uplift ³ 133%
ATI-64										
Joist Width = 2-1/2"										
9-1/2	---	---	---	---	---	SKH2520L/R	(14) 10d	(10) 10d x 1-1/2	1625	1505
11-7/8	MSH318	(6) 10d	(4) 10d x 1-1/2	2165	---	SKH2520L/R	(14) 10d	(10) 10d x 1-1/2	1625	1505
14	MSH318	(6) 10d	(4) 10d x 1-1/2	2165	---	SKH2524L/R	(16) 10d	(10) 10d x 1-1/2	1855	1505
16	MSH318	(6) 10d	(4) 10d x 1-1/2	2165	---	SKH2524L/R	(16) 10d	(10) 10d x 1-1/2	1855	1505
ATI-89										
Joist Width = 3-1/2"										
11-7/8	MSH422	(6) 10d	(6) 10d	2025	---	SKH410L/R ⁶	(16) 16d	(10) 16d	2240	1565
14	---	---	---	---	---	SKH414L/R ⁶	(22) 16d	(10) 16d	3080	1565
16	---	---	---	---	---	SKH414L/R ⁶	(22) 16d	(10) 16d	3080	1565

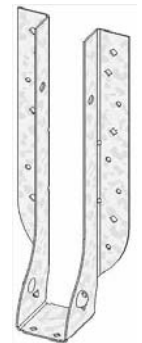
- 1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.
- 2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L or SP species solid sawn or LVL header.
Some loads may be increased for duration of load adjustments. Refer to USP Full Line Catalog for details.
- 3) Uplift loads have been increased 33% for wind and seismic loading; no further increase shall be permitted.
- 4) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long.
Minimum nail penetration shall be 1-1/2" for 10d nails and 1-5/8" for 16d nails.
- 5) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.
- 6) Miter cut required on end of joist to achieve design loads.



TFL



SKH_L
left shown



THF

DOUBLE I-JOISTS

Joist Height	Top Mount Hangers ⁴					Face Mount Hangers				
	USP Stock No. ^{1,6}	Fastener Schedule ⁵		DF-L/SP		USP Stock No. ^{1,6}	Fastener Schedule ⁵		DF-L/SP	
		Header	Joist	Down ² 100%	Uplift ³ 133%		Header	Joist	Down ² 100%	Uplift ³ 133%
Double ATI-64 Joist Width = 5"										
9-1/2	THO25950-2	(10) 16d	(6) 10d	3535	1015	THF25925-2	(12) 10d	(6) 10d	1390	930
11-7/8	THO25118-2	(10) 16d	(6) 10d	3535	1015	THF25112-2	(16) 10d	(6) 10d	1855	930
14	THO25140-2	(12) 16d	(6) 10d	3535	1015	THF25140-2	(20) 10d	(6) 10d	2500	1000
16	THO25160-2	(12) 16d	(6) 10d	3535	1015	THF25160-2	(24) 10d	(6) 10d	3000	1000
Double ATI-89 Joist Width = 7"										
11-7/8	BPH71118	(10) 16d	(6) 10d	3510	1000	HD7120	(16) 16d	(6) 10d	2240	945
14	BPH7114	(10) 16d	(6) 10d	3510	1000	HD7140	(20) 16d	(8) 10d	2800	1260
16	BPH7116	(10) 16d	(6) 10d	3510	1000	HD7160	(24) 16d	(8) 10d	3360	1260

1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.

2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L or SP species solid sawn or LVL header.

Some loads may be increased for duration of load adjustments. Refer to USP Full Line Catalog for details.

3) Uplift loads have been increased 33% for wind and seismic loading; no further increase shall be permitted.

4) Top Mount Hangers require minimum 3" header width for THO series hangers; 3-1/2" minimum header thickness for all other stock numbers.

5) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long.

Minimum nail penetration shall be 1-1/2" for 10d nails and 1-5/8" for 16d nails.

16d sinkers (0.148" diameter) by 3-1/4" long may be substituted for 10d common nails with no load reduction.

6) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.

Joist Height	Adjustable Height Hangers					Skewed 45° Hangers				
	USP Stock No. ^{1,5}	Fastener Schedule ⁴		DF-L/SP		USP Stock No. ^{1,5}	Fastener Schedule ⁴		DF-L/SP	
		Header	Joist	Down ² 100%	Uplift ³ 133%		Plate	Rafter	Down ² 100%	Uplift ³ 133%
Double ATI-64 Joist Width = 5"										
9-1/2	MSH2622-2	(6) 10d	(4) 10d	2210	--	SKH2520L/R-2 ⁷	(14) 10d	(10) 10d	1650	1575
11-7/8	MSH2622-2	(6) 10d	(4) 10d	2210	--	SKH2520L/R-2 ⁷	(14) 10d	(10) 10d	1650	1575
14	MSH2622-2	(6) 10d	(4) 10d	2210	--	SKH2524L/R-2 ⁷	(16) 10d	(10) 10d	1890	1575
16	MSH2622-2	(6) 10d	(4) 10d	2210	--	SKH2524L/R-2 ⁷	(16) 10d	(10) 10d	1890	1575
Double ATI-89 Joist Width = 7"										
11-7/8	MSH422-2	(8) 16d	(6) 16d	4200	--	HD7120-SK45L/R ^{6,7}	(16) 16d	(6) 10d	2240	710
14	MSH422-2	(8) 16d	(6) 16d	4200	--	HD7140-SK45L/R ^{6,7}	(20) 16d	(8) 10d	2800	945
16	MSH422-2	(8) 16d	(6) 16d	4200	--	HD7160-SK45L/R ^{6,7}	(24) 16d	(8) 10d	3360	945

1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.

2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L or SP species solid sawn or LVL header.

Some loads may be increased for duration of load adjustments. Refer to USP Full Line Catalog for details.

3) Uplift loads have been increased 33% for wind and seismic loading; no further increase shall be permitted.

4) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long.

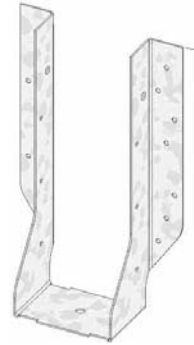
Minimum nail penetration shall be 1-1/2" for 10d nails and 1-5/8" for 16d nails.

16d sinkers (0.148" diameter) by 3-1/4" long may be substituted for 10d common nails with no load reduction.

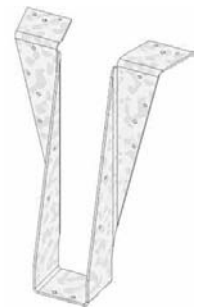
5) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.

6) Hangers are special order. Consult USP for pricing and lead times.

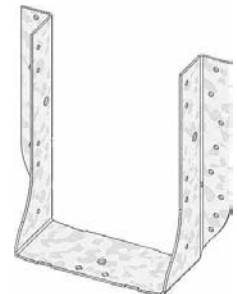
7) Miter cut required on end of joist to achieve design loads.



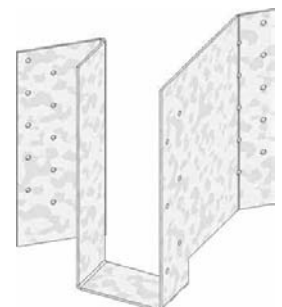
THF-Double



THO/BPH Double



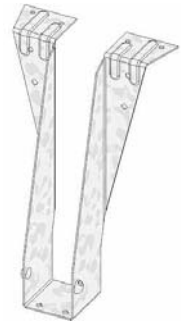
HD-Double



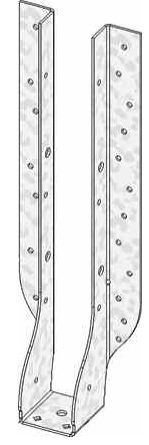
SKH_L-Double
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ADVANTECH LVL BEAMS & HEADERS

Joist Height	USP Stock No. ⁶	Top Mount Hangers ³					Face Mount Hangers													
		Fastener Schedule ⁴		Uplift ²		Down Load ¹	USP Stock No. ⁶	Fastener Schedule ⁴		Uplift ²		Down Load ¹								
		Header	Joist	133%	160%			Header	Joist	133%	160%	100%	115%	125%						
1-3/4" AdvanTech LVL														Header Width = 1-3/4"						
7-1/4	PHXU17725	(8) 16d	(6) 10d x 1-1/2	970	970	4425	HD1770	(14) 16d	(4) 10d x 1-1/2	610	730	1960	2255	2335						
9-1/4	BPH17925	(10) 16d	(4) 10d x 1-1/2	625	625	3395	HD17925	(18) 16d	(6) 10d x 1-1/2	910	1065	2520	2775	2775						
	PHXU17925	(8) 16d	(6) 10d x 1-1/2	970	970	4425	HUS179 ⁵	(30) 16d	(10) 16d	3205	3205	4925	5130	5270						
9-1/2	BPH1795	(10) 16d	(4) 10d x 1-1/2	625	625	3395	HD17925	(18) 16d	(6) 10d x 1-1/2	910	1065	2520	2775	2775						
	PHXU1795	(8) 16d	(6) 10d x 1-1/2	970	970	4425	HUS179 ⁵	(30) 16d	(10) 16d	3205	3205	4925	5130	5270						
11-1/4	BPH17112	(10) 16d	(4) 10d x 1-1/2	625	625	3395	HD17112	(22) 16d	(6) 10d x 1-1/2	910	1065	2870	2975	3045						
	PHXU17112	(8) 16d	(6) 10d x 1-1/2	970	970	4425	HUS179 ⁵	(30) 16d	(10) 16d	3205	3205	4925	5130	5270						
11-7/8	BPH17118	(10) 16d	(4) 10d x 1-1/2	625	625	3395	HD17112	(22) 16d	(6) 10d x 1-1/2	910	1065	2870	2975	3045						
	PHXU17118	(8) 16d	(6) 10d x 1-1/2	970	970	4425	HUS179 ⁵	(30) 16d	(10) 16d	3205	3205	4925	5130	5270						
14	BPH1714	(10) 16d	(4) 10d x 1-1/2	625	625	3395	HD1714	(26) 16d	(8) 10d x 1-1/2	1065	1065	3100	3235	3330						
	PHXU1714	(8) 16d	(6) 10d x 1-1/2	970	970	4425	HUS179 ⁵	(30) 16d	(10) 16d	3205	3205	4925	5130	5270						
2 Ply 1-3/4" AdvanTech LVL														Header Width = 3-1/2"						
9-1/4	PHXU35925	(8) 16d	(6) 10d	1035	1240	6650	THD410	(38) 16d	(20) 10d	3145	3775	5320	6120	6650						
	HLBH35925	(15) NA16D-RS	(6) 16d	1420	1420	10620	THDH410 ⁵	(46) 16d	(12) 16d	3490	3490	8170	8260	8260						
9-1/2	PHXU3595	(8) 16d	(6) 10d	1035	1240	6650	THD410	(38) 16d	(20) 10d	3145	3775	5320	6120	6650						
	HLBH3595	(15) NA16D-RS	(6) 16d	1420	1420	10620	THDH410 ⁵	(46) 16d	(12) 16d	3490	3490	8170	8260	8260						
11-1/4	PHXU35112	(8) 16d	(6) 10d	1035	1240	6650	THD410	(38) 16d	(20) 10d	3145	3775	5320	6120	6650						
	HLBH35112	(15) NA16D-RS	(6) 16d	1420	1420	10620	THDH412 ⁵	(56) 16d	(14) 16d	4935	5925	9875	11115	11325						
11-7/8	PHXU35118	(8) 16d	(6) 10d	1035	1240	6650	THD410	(38) 16d	(20) 10d	3145	3775	5320	6120	6650						
	HLBH35118	(15) NA16D-RS	(6) 16d	1420	1420	10620	THDH412 ⁵	(56) 16d	(14) 16d	4935	5925	9875	11115	11325						
14	PHXU3514	(8) 16d	(6) 10d	1035	1240	6650	THD410	(38) 16d	(20) 10d	3145	3775	5320	6120	6650						
	HLBH3514	(15) NA16D-RS	(6) 16d	1420	1420	10620	THDH414 ⁵	(66) 16d	(16) 16d	5645	6770	11100	11455	11690						
16	PHXU3516	(8) 16d	(6) 10d	1035	1240	6650	THD412	(48) 16d	(20) 10d	3145	3775	6650	6650	6650						
	HLBH3516	(15) NA16D-RS	(6) 16d	1420	1420	10620	THDH414 ⁵	(66) 16d	(16) 16d	5645	6770	11100	11455	11690						
18	PHXU3518	(8) 16d	(6) 10d	1035	1240	6650	THD412	(48) 16d	(20) 10d	3145	3775	6650	6650	6650						
	HLBH3518	(15) NA16D-RS	(6) 16d	1420	1420	10620	THDH414 ⁵	(66) 16d	(16) 16d	5645	6770	11100	11455	11690						

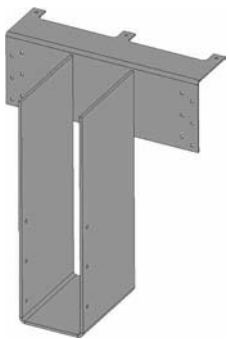


THO

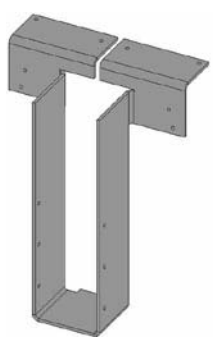


HD

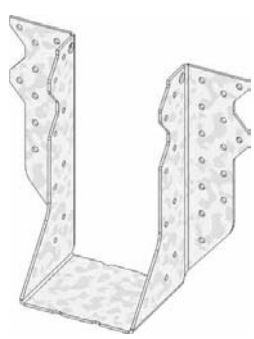
- 1) Loads listed are based on hanger attachment to a AdvanTech LVL header. Some loads may be increased for duration of load adjustments. Refer to USP's Full Line Catalog for details.
- 2) Uplift loads have been increased 33% or 60% for wind and seismic loading; no further increase shall be permitted.
- 3) Top Mount Hangers require a minimum 3-1/2" header thickness for all other stock numbers.
- 4) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long.
Minimum nail penetration shall be 1-1/2" for 10d nails and 1-5/8" for 16d nails.
16d sinkers (0.148" diameter) by 3-1/4" long may be substituted for 10d common nails with no load reduction.
- 5) Joist nails need to be toe nailed at a 30° to 45° angle to achieve listed loads for THDH and HUS models.
- 6) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.



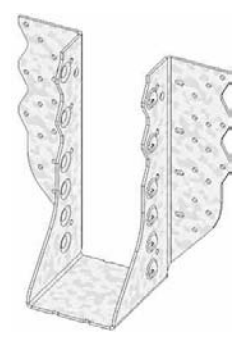
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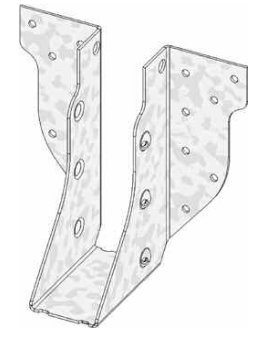
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THD



THDH

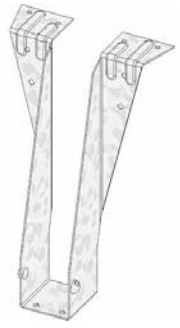


HUS

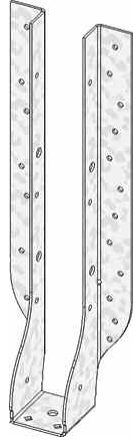
ADVANTECH LVL BEAMS & HEADERS

Joist Height	USP Stock No. ⁵	Top Mount Hangers ³					Face Mount Hangers								
		Fastener Schedule ⁴		Uplift ²		Down Load ¹	USP Stock No. ⁶	Fastener Schedule ⁴		Uplift ²		Down Load ¹			
		Header	Joist	133%	160%			Header	Joist	133%	160%	100%	115%	125%	
3 Ply 1-3/4" AdvanTech LVL															
Header Width = 5-1/4"															
9-1/4	PHXU52925	(8) 16d	(6) 10d	1035	1240	6650	THD610	(38) 16d	(20) 10d	3335	3410	5585	6425	6985	
	HLBH52925	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH610 ⁵	(46) 16d	(16) 16d	4565	4565	8640	9855	9855	
9-1/2	PHXU5295	(8) 16d	(6) 10d	1035	1240	6650	THD610	(38) 16d	(20) 10d	3335	3410	5585	6425	6985	
	HLBH5295	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH610 ⁵	(46) 16d	(16) 16d	4565	4565	8640	9855	9855	
11-1/4	PHXU52112	(8) 16d	(6) 10d	1035	1240	6650	THD610	(38) 16d	(20) 10d	3335	3410	5585	6425	6985	
	HLBH52112	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH612 ⁵	(56) 16d	(20) 16d	5180	5180	9935	9935	9935	
11-7/8	PHXU52118	(8) 16d	(6) 10d	1035	1240	6650	THD610	(38) 16d	(20) 10d	3335	3410	5585	6425	6985	
	HLBH52118	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH612 ⁵	(56) 16d	(20) 16d	5180	5180	9935	9935	9935	
14	PHXU5214	(8) 16d	(6) 10d	1035	1240	6650	THD610	(38) 16d	(20) 10d	3335	3410	5585	6425	6985	
	HLBH5214	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH614 ⁵	(66) 16d	(22) 16d	5795	5795	11645	11645	11645	
16	PHXU5216	(8) 16d	(6) 10d	1035	1240	6650	THD612	(48) 16d	(20) 10d	3335	4000	7055	8115	8415	
	HLBH5216	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH614 ⁵	(66) 16d	(22) 16d	5795	5795	11645	11645	11645	
18	PHXU5218	(8) 16d	(6) 10d	1035	1240	6650	THD612	(48) 16d	(20) 10d	3335	4000	7055	8115	8415	
	HLBH5218	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH614 ⁵	(66) 16d	(22) 16d	5795	5795	11645	11645	11645	
4 Ply 1-3/4" AdvanTech LVL															
Header Width = 7"															
9-1/4	PHXU71925	(8) 16d	(6) 10d	1035	1240	6650	THD7210	(38) 16d	(20) 16d	3335	3410	5585	6425	6985	
	HLBH71925	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH7210 ⁵	(46) 16d	(12) 16d	3490	3490	8170	8260	8260	
9-1/2	PHXU7195	(8) 16d	(6) 10d	1035	1240	6650	THD7210	(38) 16d	(20) 16d	3335	3410	5585	6425	6985	
	HLBH7195	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH7210 ⁵	(46) 16d	(12) 16d	3490	3490	8170	8260	8260	
11-1/4	PHXU71112	(8) 16d	(6) 10d	1035	1240	6650	THD7210	(38) 16d	(20) 16d	3335	3410	5585	6425	6985	
	HLBH71112	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH7212 ⁵	(56) 16d	(14) 16d	4935	5925	9875	11360	11840	
11-7/8	PHXU71118	(8) 16d	(6) 10d	1035	1240	6650	THD7210	(38) 16d	(20) 16d	3335	3410	5585	6425	6985	
	HLBH71118	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH7212 ⁵	(56) 16d	(14) 16d	4935	5925	9875	11360	11840	
14	PHXU7114	(8) 16d	(6) 10d	1035	1240	6650	THD7210	(38) 16d	(20) 16d	3335	3410	5585	6425	6985	
	HLBH7114	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH7214 ⁵	(66) 16d	(16) 16d	5645	6770	11580	11840	11840	
16	PHXU7116	(8) 16d	(6) 10d	1035	1240	6650	HD7120	(16) 16d	(6) 10d	945	1130	2240	2575	2800	
	HLBH7116	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH7214 ⁵	(66) 16d	(16) 16d	5645	6770	11580	11840	11840	
18	PHXU7118	(8) 16d	(6) 10d	1035	1240	6650	HD7140	(20) 16d	(8) 10d	1260	1510	2800	3220	3500	
	HLBH7118	(15) NA16D-RS	(6) 16d	1550	1605	10620	THDH7214 ⁵	(66) 16d	(16) 16d	5645	6770	11580	11840	11840	

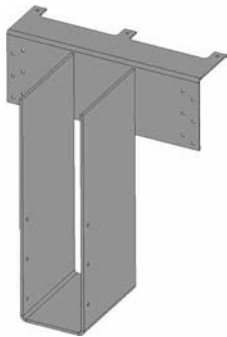
See footnotes on page 8.



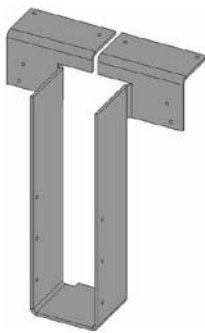
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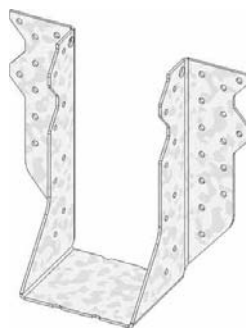
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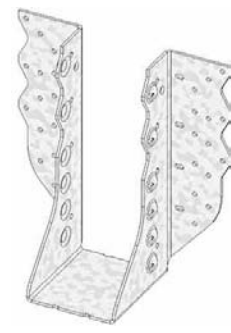
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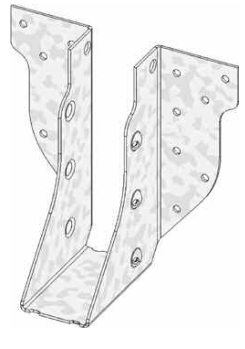
PHXU



THD



THDH



HUS

GENERAL INSTALLATION

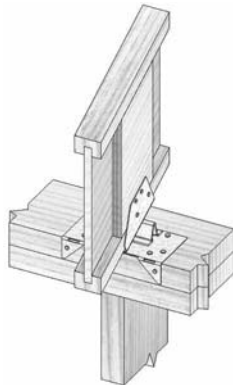
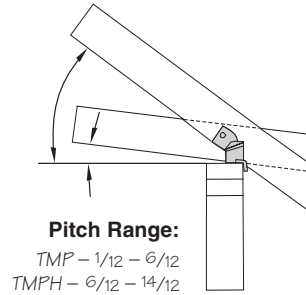
Variable Pitch Connectors – TMP & TMPH series

Installation:

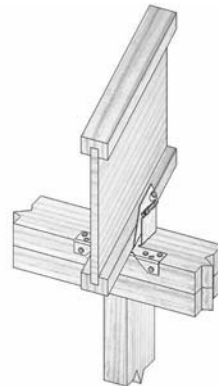
- Use all specified fasteners.
- Position connector on top plate. Fasten connector to outside of top plate with specified nails. Insert rafter into rafter pocket. Adjust rafter and pocket to correct pitch. Fasten rafter to connector with specified nails. Installing the TMP requires driving specified nails through the opposing slots in the pocket. TMPH installation involves sliding the fulcrum until it supports the pocket at the desired pitch and nailing down through the fulcrum base into the top plate to lock the fulcrum into position.

USP Stock No. ^{1,5}	Fastener Schedule ⁴		DF-L/SP	
	Header	Joist	Down ²	Uplift ³
			100%	133%
ATI-64				
Joist Width = 2-1/2"				
TMP25	(6) 10d	(4) 10d x 1-1/2	1970	220
TMPH25	(10) 10d	(8) 10d x 1-1/2	1945	200
ATI-89				
Joist Width = 3-1/2"				
TMP4	(6) 10d	(4) 10d x 1-1/2	1970	220
TMPH4	(10) 10d	(8) 10d x 1-1/2	1945	200

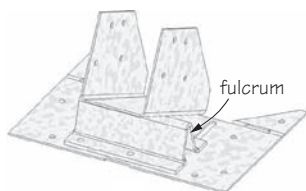
- 1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.
- 2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L, or SP species solid sawn or LVL header. Loads are governed by test results; no further increase shall be permitted.
- 3) Uplift loads have been increased 33% for wind and seismic loading; no further increase shall be permitted.
- 4) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long.
Minimum nail penetration shall be 1-1/2" for 10d nails.
- 5) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.



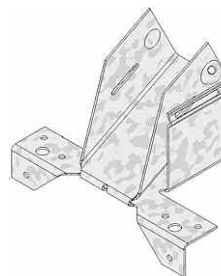
*Typical TMPH
installation*



*Typical TMP
installation*



TMPH



TMP

GENERAL INSTALLATION

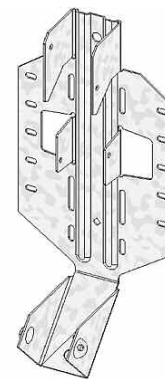
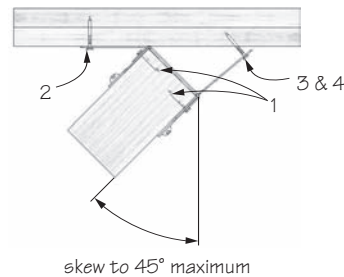
Slope/Skew Hangers – LSSH series

Installation:

- Use all specified fasteners.

Steps:

1. Position LSSH connector against plumb-cut end of joist. Fasten joist side flanges on both sides with 10d x 1-1/2" nails. Bend seat up to fit against joist bottom and drive (1) 10d x 1-1/2" nail through bottom seat into rafter bottom. Drive (2) 10d x 1-1/2" nails at downward angle through dimpled nailing guides.
2. Lean connector and rafter end against ridge beam at desired position. Install 10d or 16d nails through nail holes into ridge beam at right 90° angle. If skewing the rafter, only drive nails into ridge beam on inside flange.
3. Bend flange to desired angle.
4. Hammer outside flange until edge touches header. Fasten outside flange to ridge by driving 10d or 16d nails through nail holes.
 - Web stiffeners are required for all wood I-Joist installations.
 - Designer may consider adding a tension restraint for the supported member for roof slopes exceeding 6/12.



LSSH

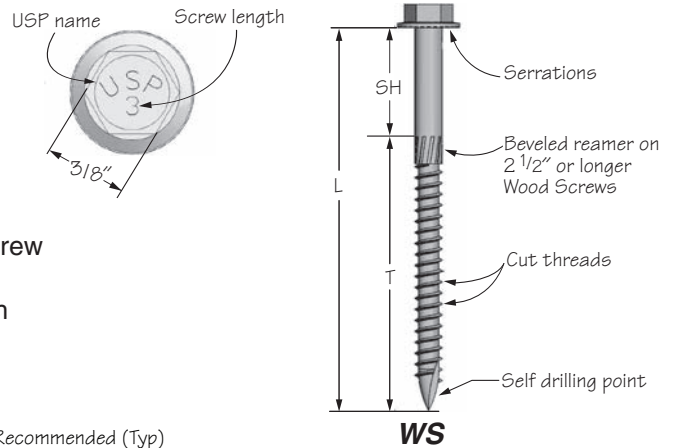
Joist Height	USP Stock No. ^{1,5}	Fastener Schedule ⁴		DF-L/SP	
		Header	Joist	Down ²	Uplift ³
ATI-64					
Joist Width = 2-1/2"					
9-1/2	LSSH25	(14) 16d	(12) 10d x 1-1/2	1825	1195
11-7/8	LSSH25	(14) 16d	(12) 10d x 1-1/2	1825	1195
14	LSSH25	(14) 16d	(12) 10d x 1-1/2	1825	1195
16	LSSH25 ⁶	(14) 16d	(12) 10d x 1-1/2	1825	1195
ATI-89					
Joist Width = 3-1/2"					
11-7/8	LSSH35	(14) 16d	(12) 10d x 1-1/2	1920	1585
14	LSSH35	(14) 16d	(12) 10d x 1-1/2	1920	1585
16	LSSH35 ⁶	(14) 16d	(12) 10d x 1-1/2	1920	1585

- 1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.
- 2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L or SP species solid sawn or LVL header. Some loads may be increased for duration of load adjustments. Refer to USP Full Line Catalog for details.
- 3) Uplift loads have been increased 33% for wind and seismic loading; no further increase shall be permitted.
- 4) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long. Minimum nail penetration shall be 1-5/8" for 16d nails.
- 5) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.
- 6) LSTA24 strap required along top chord for lateral restraint.

GENERAL INSTALLATION

WS Series Wood Screw Applications - Joining 2, 3, or 4 Ply AdvanTech LVL Members Installation:

- Screws are self-drilling.
- Install using a low speed clutch drill with 3/8" hex head driver. The washer head should be flat to the surface and the serrations will oppose turning and release the clutch. Do not over-tighten the screws.
- For 2 ply members, wood screws shall be installed with the screw heads in the loaded ply.
- For 3 or 4 ply members, wood screws shall be installed in both outer plies.
- Designer shall specify all wood screws locations.
- Increase edge and end distances if wood splitting occurs.
- Stagger all screws installed into the opposite face.



Recommended Row Guidelines

A minimum of 2 rows of screws shall be used for all members 5 1/2" and larger

Other stagger patterns as approved by Engineer are acceptable

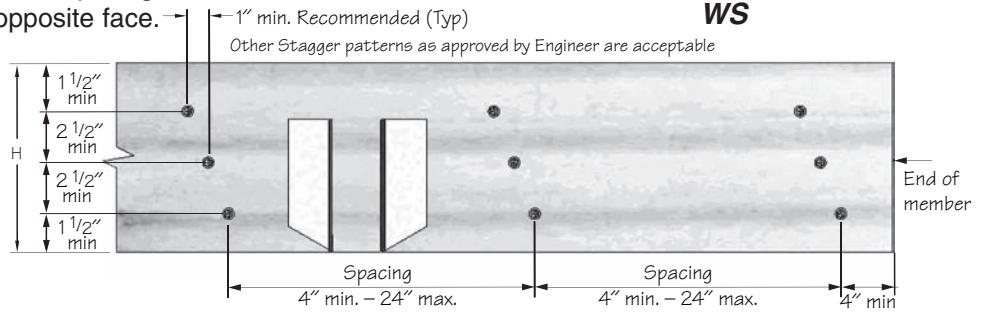
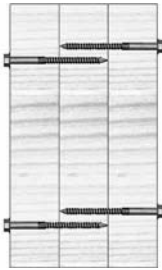


Figure 1



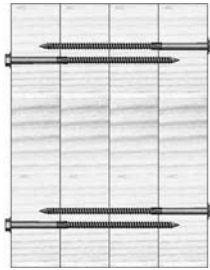
WS35 installed in (2) 1 3/4" Ply

Figure 2



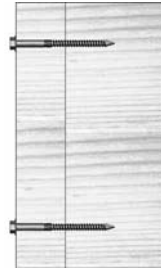
WS35 installed in (3) 1 3/4" Ply

Figure 3



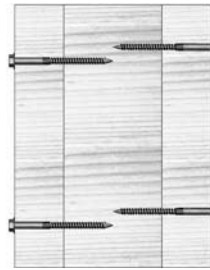
WS6 installed in (4) 1 3/4" Ply

Figure 4



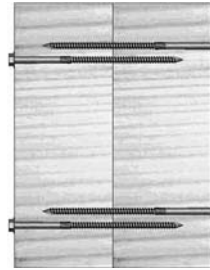
WS35 installed in (1) 1 3/4", (1) 3 1/2" Ply

Figure 5



WS35 installed in (2) 1 3/4", (1) 3 1/2" Ply

Figure 6



WS6 installed in (2) 3 1/2" Ply

USP Stock No.	Description	Dimensions			Multiple Members Installation Figure ^{2,3,6}	Maximum Allowable Uniform Loads that can be applied to either outside member (Lbs. Per Lineal Ft.) ^{1,4,5,7,8}					
		L	SH	T		Douglas Fir-Larch (G = 0.50)					
						Wood Screw Spacing					
						12" O.C.		18" O.C.		24" O.C.	
2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows						
WS35	1/4" x 3-1/2"	3-1/2"	1"	2-1/2"	1	1000	1500	665	1000	500	750
					2	750	1125	500	750	375	565
					4	750	1125	500	750	375	565
					5	665	1000	445	665	335	500
WS6	1/4" x 6"	6"	1-3/4"	4-1/4"	3	665	1000	445	665	335	500
					6	1000	1500	665	1000	500	750

1) Based on Zscrew = 250 pounds in Douglas Fir-Larch with a side member thickness of not less than 1-3/4".
 2) Load values depicted assume all uniform load is applied to the most narrow outside ply only.
 3) Load values neglect any contribution of screws installed to opposite side, even if they extend significantly into the loaded ply.
 4) Loads are for normal (100%) duration of load, and may be increased in accordance with the code.
 5) Uniform loads in table represent the capacity of the fasteners. The capacity of the LVL beam may be less and should be checked by a qualified designer or with the manufacturer's literature.
 6) For Figures 2, 3, 5, and 6: Stagger the screws on opposite face by half minimum spacing requirements.
 7) A qualified designer shall ensure the adequacy of a 7" wide beam to resist the applied load on one edge; otherwise, the loads shall be uniformly distributed across the width or applied equally on both sides.
 8) Allowable loads are based on the 1997 NDS®.

